ROYAL ASTRONOMICAL SOCIETY.

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Capt. W. H. Smyth, R.N., President, in the Chair.

John Washington, Esq. Capt. R.N. F.R.S., and Edwin Dunkin, Esq., of the Royal Observatory, Greenwich, were balloted for, and duly elected Fellows of the Society.

The Secretary read the following extract of a letter from the Rev. C. Turnor to the President, accompanying the gift of a valuable astronomical manuscript, concerning which a paper was recently presented to the Society by Mr. Harris:—

"The favourable opinion you have expressed to me of the merits of the two volumes of Astronomical MSS., written on vellum, in, I think, the fourteenth century, which I purchased of Mr. Thorpe, the London bookseller, induces me to think they might be acceptable to the Royal Astronomical Society; may I, then, request the favour of you to present them, in my name, to that Society? I beg to assure you I shall feel great satisfaction in their being preserved in the library of that Society, which has been instituted for the purpose of advancing the science of Astronomy."

The following letter from the President to the Secretary was read:—

"*No. 3 Cheyne Walk, Chelsea, March* 13, 1845.

"Dear Sir,—As the cabinet-box of which I make mention on page 423, Vol. I., of my *Cycle of Celestial Objects*, contains the original slips from which my work was written, it may, possibly, be a desirable reference at some future day, and, in that view, I beg to present it to the Royal Astronomical Society. It contains the whole results of my measure-department in the working-list order of right ascension, the means having been reduced most carefully by myself, and repeatedly compared with such rigour, that none but the most insignificant error can possibly remain. In addition to what has been printed, these slips contain the diagrams and quadrants of each object, to the absence of which all the graver double-star mistakes which I have yet encountered are directly imputable. There are also a few unprinted remarks relative to the identity, &c., of the objects.

"It was intended that this cabinet should remain at Hartwell

House, together with the polar axis and the Bedford manuscripts, but Dr. Lee has kindly consented to this transfer. Previously, however, to its removal, a most careful scrutiny has been instituted of the slips and other papers with the printed *Cycle*, and various typographical errors have been detected in consequence. Some printed lists of these are herewith forwarded for any Fellows of the Society who may possess a copy of the work.—I have the honour to be, &c.

" W. H. Smyth.

" *Rev. R. Main.*"

The following communications were read :—

I. Copy of a Letter from Professor Fuss, Perpetual Secretary of the Imperial Academy of Sciences at St. Petersburg, to the Baron Berzelius, Perpetual Secretary of the Royal Academy of Sciences at Stockholm, on the contemplated extension of the Swedish Arc of Meridian, from its northern extremity at Pahtawara to the North Cape ; with a Letter from Capt. Sir John Ross, R.N., to Dr. Lee. Communicated by Dr. Lee.

II. A Letter from the Rev. S. J. Rigaud to the Secretary, on the Character of Halley.

" *January* 9, 1845.

" Dear Sir,—In addition to the arguments which I have employed in defence of Halley, in the tract which I did myself the honour to present to the Astronomical Society, I wish to mention the following facts :—

" 1st. I have evidence to shew that Halley was supposed at one time to be an aspirant to the office of precentor in a cathedral, I think that of Chichester, but I have not the memorandum by me in London. He was not in orders, so that this is clearly a mistake ; but it is inconceivable that a man of known infidel views could have been seriously mentioned as a candidate for ecclesiastical duties.

" 2d. The following passage appears in the correspondence of Sir Thomas Browne, the learned and excellent author of the *Religio Medici*, vol. I. p. 224 :—

" ' Hee (*i. e.* Halley) came to church constantly, the parish church, which was St. Aldate's, commonly called St. Fowl's, and whither the scollars of Pembroke college also went, and had one isle for themselves. Hee was a very good and plaine-dealing man, and had read Euclide and Ptolemie very accurately, and also Aristotle, whereof we should often discourse, and I cannot but remember him with some content.'

" The name of the Saint *Fowl's* is probably a mistake in transcribing or printing from the original MS. for *Towl's*, the ordinary pronunciation of the name being *St. Olls.*

" I consider this extract of great value ; not only does it give the direct testimony of Sir T. Browne to regular habits of religious observance in Halley, but it bears remarkably on another point. It has been usual to trace Halley's supposed scepticism to an exclusive

devotion of his mental powers to demonstrative reasoning, or to physical phenomena, and the inductions derived from these. It is not now necessary to argue how utterly false is the supposed connexion as cause and effect between such speculations and infidelity; for the passage which has been cited shews that in the present case even the presumed cause was not present; it was not only inactive, but actually non-existent. Halley's mind had been directed, not only to physical, but to metaphysical and moral science. His reasoning powers were practised, not only in demonstrative, but in moral and contingent evidence.

"Nor is this passage from Browne the only evidence to this fact. An analysis of the Aristotelian *Ethics* carefully drawn out in Halley's own handwriting, is in existence, preserved in Lord Macclesfield's library, at Shirburn castle; bound up with it, is also a treatise on logic. I have not yet had an opportunity of examining this, but, knowing how logic was taught at that period, I think it very likely that the tract may shew him to have been well acquainted with dialectical science, or the logic of contingent, no less than that of necessary truth. Much, however, may be inferred from what I am able to state positively; and, trusting that it may be of interest to yourself and some members of the Society,—I remain, dear sir, &c.

"Stephen Jordan Rigaud."

III. A Description of the Observatory of the College of Georgetown, near Washington, in the United States of America, by James Curley, Esq. Communicated by W. Simms, Esq.

"The Observatory of Georgetown College is situated a short distance from the banks of the Potomac River, 160 feet above high-water mark; it commands an extensive view of Washington and the neighbouring country, and is in sight of, and one and a half miles distant N.W. of, the Naval Observatory recently erected by our government. The house fronts the south, is 60 feet long, and about 30 feet wide, has 3 rooms on the ground-floor, of which the east and west, designed for meridian instruments, are 15 feet in height; the central part of the building is 30 feet square, running up two stories, each 15 feet in height, and appropriately surmounted with a moveable hemispherical dome 20 feet in diameter.

"In the western room we have lately mounted a transit telescope, having a $4\frac{1}{2}$ inch object-glass of 76 inch focal length, and made in the most approved manner by Ertel and Son, of Munich. A sidereal clock by R. Molyneux is in the same room.

"The eastern room is ready for a meridian circle, which Mr. Simms, of London, has in hand; the circles will be 46 inches in diameter, and the telescope 5 feet in length.

"The room formed by the dome will be occupied by an equatoreal refractor, now being made by Gambey, of Paris; it has an object-glass of 7 French inches in diameter, and of about 10 feet focal length; the hour and declination circles are 16 and 20 inches in diameter, the latter reading to 10 seconds of space, and the former to 4 seconds of time. This instrument will rest on a solid

pier of masonry 40 feet high, 11 feet square at the base, and 6 at the top, and capped with heavy slabs of freestone.

" Besides these, there are some smaller instruments, and a good mean-time chronometer by R. Molyneux : another sidereal clock is daily expected from London. We desire and hope, in time, to obtain what is necessary to make the establishment complete."

IV. Communications respecting the Great Comet of 1845.

1. Estimated Positions of the Comet made at Nevis in the West Indies. By George Webbe, Esq. Communicated in a letter to the Secretaries.

" *Nevis, West Indies, Jan.* 12, 1845.

" On the evening of Sunday, the 5th instant, a large and very brilliant comet became visible here at sunset, having then first emerged from the solar rays.

" On the evening of Monday, the 6th, I first observed it; but being unprovided with any instrument mounted equatoreally, and, indeed, having no instruments at all prepared for observation, in consequence of a change of residence, I was constrained to be satisfied with such estimated values of its position as I could best obtain. On the evening of the 6th, its near approach to δ^1 and δ^2 *Gruis* enabled me to lay down a telescopic triangle by estimation, by which I succeeded in obtaining an approximation to its place, which probably was not very erroneous. On the 7th, 8th, and 10th, I was not so fortunate, and was obliged to be satisfied with estimating its position by eye, in reference to β, θ, and ι *Gruis*. On the 9th, from its proximity to θ, I had an opportunity of making a better estimate. On the 11th, the clouds prevented any observation.

" Although this comet will bear no comparison with the magnificent one of 1843, it is yet a very splendid object. The nucleus is large, and rather suddenly condensed, but indicates nothing like a defined termination. The tail appears homogeneous, undivided, and straight, and at present seems to be about 10° in length. From recollection, I should say, that the general appearance of this comet is fully as imposing as that of Halley's in its most brilliant condition, if not more so.

Deduced Positions of the Comet.

Day.	Right Ascension.	South Declination.
d h m	h m	° ′
Jan. 6 7	22 21·5	44 44
7 7 15	22 35·5	44 32
8 7	22 47·5	44 22
9 7 30	22 58	44 10
10 8	23 7	43 52

2. Results of Sextant Observations of Distances of the Comet from known Stars. By W. H. Simms, Esq. Extracted from a letter to W. Simms, Esq., and communicated by him.

"*Colombo, Ceylon, January* 15, 1845.

"A large comet has been visible here lately. I saw it on the 31st of December last, when its nucleus was about as bright as a star of the third magnitude, and the tail about 15° long, its edges being sharp and clear, and the light very equally diffused between them. I subjoin the results of a few observations with the sextant,* which I believe may be depended upon as *tolerably good*. The mode of taking the observations was to measure the comet's distances from two known and properly chosen stars, and then to calculate its place.† By observing it with several pairs of stars in the course of the same evening, I found the results to agree very well, and am, therefore, inclined to place some confidence in them.

"The following are the places of the comet observed at a house in the neighbourhood of Colombo, whose latitude and longitude are respectively about 6° 54′ 59″ N.; and 80° 10′ E.

Mean Time at Greenwich, January 1845.	Comet's Right Ascension.	Comet's Declination.
d h m	h m s	° ′ ″
5 1 54	22 5 49	44 49 21 South
6 1 49	22 18 17	44 46 28
7 1 52	22 30 50	44 40 20
8 1 40	22 42 51	44 27 44
11 1 54	23 18 10	43 23 1

"I suppose that you will have seen the comet in Europe before this reaches you, as the declination is diminishing very fast. It is, however, rapidly decreasing in brilliancy, and just now the moon is too bright to allow of the comet being observed. I saw it, however, last night, but it was too faint to be observed with a sextant."

3. Remarks on the Comet, by J. Robinson, Esq. Communicated by the Astronomer Royal.

The comet was seen on leaving Ichaboe on the 23d of December, 1844, and its nucleus appeared like a star of the second magnitude, with an immense tail, bearing W.S.W. by compass. It continued to be seen on every fine evening. On the 6th of January, 1845, in longitude 6° 20′ W., and latitude 8° 30′ S., it was seen in great brilliancy, the tail being vertical, and the head downwards. The length of the tail was 8° 20′. It was seen for the last time on February 2.

4. Remarks on the Comet. By J. J. Waterston, Esq. Accompanied by a Chart, marking its course among the Stars. Including also, Observations of the Comet, made at the Madras Observatory, by T. G. Taylor, Esq. Communicated by Captain Beaufort, R.N.

"*Bombay, January* 31, 1845.

"The new year has brought us a celestial visitor which, by its splendid appearance in our southern sky, reminds us of the great

* An instrument of 10 inches radius, reading to 10″ by Troughton.

† It is desirable that the measures of distance should be communicated to the Society.—*Sec.*

comet of March 1843. There is the same disproportion between the tail and nucleus, but it is altogether on a reduced scale, the tail being only 10° long when first seen, and the nucleus shining with the brightness of a star of the fifth magnitude. The great comet of 1843, when first seen here, was visible in the midst of bright twilight, half an hour after sunset. It shone with the dull, red light of an ignited coal, and the immense tail seemed like a dense, white cloud, springing up from the horizon, sharply defined for about 20°, and in a few days it extended to 43°. After a few days, the head of the present comet could not be recognised by the naked eye, but the large tail continued to be a conspicuous object until the increasing moonlight overpowered it. After full-moon, it could still be recognised as a faint streak of light, until this evening, when it was only visible through a telescope.

" In the accompanying chart, I have traced its motion with the assistance of the *Madras Catalogue of Southern Stars*, and made two attempts to compute the parabolic elements, but the positions seem too loosely fixed to obtain them with any accuracy. The second trial ought, nevertheless, to be an approximation, as it includes a sweep of twenty-one days, and the utmost error of the observations cannot exceed 5′.

" I have since been favoured by Mr. Taylor with a copy of his observations up to the 17th January, which I annex, but have not had time to compute an orbit from them.

*Observations of the Comet made at the Madras Observatory.**

Day.	Madras Mean Time.	Right Ascension.	North Polar Distance.
1845.	h m s	h m s	° ′ ″
Jan. 5	6 47 31	22 5 7	134 49 10
6	6 48 33	22 18 6	134 49 20
7	6 53 13	22 30 35	134 42 45
8	6 52 15	22 42 38	134 27 39
9	6 46 23	22 54 31	134 12 16
10	6 46 4	23 6 25	133 50 29
11	6 51 23	23 17 45	133 24 15
12	6 42 27	23 28 46	132 53 54
13	7 0 17	23 39 38	132 21 49
14	6 50 23	23 49 52	131 43 40
15	6 47 12	23 59 42	131 6 39
16	6 35 14	0 9 4	130 24 30
17	6 50 54	0 18 29	129 40 57

(Signed) T. G. Taylor.

* The irregularity of the differences of the North Polar Distance seems to denote that some of the results are erroneous, probably through errors of transcribing.—*Sec.*

" These supersede the chart; but it may still serve as a picture to shew a singular luminous appendage, which, on the evening of the 16th, I observed for the first time to proceed from the head of the comet *towards* the sun almost diametrically opposite to the proper tail. It consisted of a narrow band of faint light of about the same breadth as the head. The edges were well defined and parallel. It could be traced for 3°, and probably extended much farther, as the increasing moonlight was very unfavourable to so faint an object. Its direction and appearance, when first seen on the 16th, is shewn on the chart. Another representation of it is given, on a large scale, as it appeared on the evening of the 25th. The two tails now made an evident angle, and the space was filled with a diffused, irregular light, giving a triangular shape to the comet when seen by the naked eye. The direction of the tails, in reference to the adjacent stars, has been carefully set down on the chart. This evening the same appearance continues, but very faint, the angle at the head of the comet being about 140°. Mr. Milne, in his essay on comets, states, that in the comet of 1824, the same kind of double tail was observed. It would be interesting to know if there is any chance of their being the same. A newspaper correspondent here remarks, that there is a considerable resemblance in the elements (except the perihelion distance) to the comet of 1737 (Delambre's *Astronomy*). The comet of 1557, which is expected to return in 1848, is also not very widely different in its elements.

" J. J. Waterston."

5. Observations made at the Observatory of Georgetown, Demerara. Communicated by Lord Stanley through the Astronomer Royal.

" *Demerara Observatory, 18th January*, 1845.

" *Observations of the Comet.*

" On the 26th December, 1844, about seven o'clock P.M., discovered a comet about 5° above the south-west horizon. Not having any instruments at hand except a compass, took its bearings, and found it to be about 40° south declination.

" From this date to the 8th January, 1845, could not obtain an observation, from the density of the atmosphere.

" On the 8th January, found, by observation, its position to be in the east wing of *Grus* or *Crane*. About 12° in an easterly direction from δ *Gruis*, and 4° distance from γ *Gruis*.

" On the 12th January, the tail of the comet extended a little to the west of the star γ *Phenicis*, and was about 7° in length; the nucleus was nearly in a line with the stars ι and γ in the same constellation, and, although not well defined, appeared equal in size to a star of the fourth magnitude.

" On the 15th January, found, by observation, that it was going in nearly a direct line to γ *Phenicis*, and was distant about 5° from ε in the same constellation, bearing north.

" On the 16th and 17th instant, its appearance was so very indistinct, that no accurate observations could be obtained; and as

it has been apparently fast receding from the sun since the 12th instant, no doubt it will soon disappear altogether.

" From observing the distances of the four fixed stars, viz. *Sirius*, *Aldebaran*, *Achernar*, and *Fomalhaut*, from the nucleus, found its right ascension and declination to be as follows, at about $7^h\ 30^m$ mean-time, each evening :—

Day.	Right Ascension.	South Declination.
1845.	h m	° ′
Jan. 8	22 10	44 00
10	22 32	44 05
12	23 05	44 15
15	23 30	44 30

" James Donald,
" W. Wilson."

V. Observations of Distances of the Great Comet of 1843, from known Stars, made at Port Essington, by Sir Everard Home, and Mr. Brown, Master of her Majesty's Ship Alligator. Communicated by Captain Beaufort, R.N.

VI. Description of a Method of using Scales constructed for the Prediction of Occultations. By J. J. Waterston, Esq. Communicated by Captain Beaufort, R.N.

VII. Observations of the Second Comet of Mauvais, accompanied by a Chart of its Progress among the Stars. By J. J. Waterston, Esq. Communicated by Captain Beaufort, R.N.

VIII. Observations and Elements of D'arrest's Comet. By C. Rumker, Esq. Communicated by Dr. Lee.

The following table contains the right ascensions and declinations of the comet resulting from the observations :—

Day.	Mean Time at Hamburg.	Apparent Right Ascension of Comet.	Apparent North Declination of Comet.	No. of Obser.
1845.	h m s	° ′ ″	° ′ ″	
Jan. 3	7 45 3	292 34 1·5	38 35 17·2	15
10	7 45 54	290 5 18·5	41 30 37·7	14
11	8 16 5	289 38 38·3	41 57 51·1	2
,,	16 11 23	289 30 31·5	42 6 45·5	12
12	7 32 5	289 12 53·8	42 24 14·9	10

From an observation made at Berlin, on December 28, and observations at Hamburg, on January 3 and 10, Mr. Rumker has computed the following elements :—

Perihelion Passage, Jan. 8, 2388752, Greenwich Mean Time.

Longitude of perihelion	91° 21′ 29″
Longitude of ascending node.....	337 7 37
Inclination	47 4 21
Logarithm of perihelion distance	9·95756

Motion direct.

IX. Correction of the Longitude of the Observatory of Hamburg, by Observations of Moon-Culminating Stars. By C. Rumker, Esq. Communicated by Dr. Lee.

The author compares the observations of the moon and moon-culminating stars, made at Hamburg, with those made at Greenwich and Edinburgh in 1839, and at Berlin in 1840. He assumes the longitude of Edinburgh to be $+12^m\ 43^s{\cdot}6$; that of Berlin to be $-53^m\ 35^s{\cdot}5$; and that of Hamburg to be $-39^m\ 54^s{\cdot}0$ west of Greenwich; and he obtains for the correction of this assumed longitude of Hamburg, $-0^s{\cdot}054$, whence the corrected longitude of Hamburg results $-39^m\ 54^s{\cdot}054$.

X. Observations of D'arrest's Comet. By R. Snow, Esq.

The equatoreal observations made by Mr. Snow are approximate.

On February 5, the right ascension of the comet was observed with the transit instrument, by marking the time of its entrance into and departure from the field, and of its estimated passage across the centre. The corrected sidereal time of its passage across the meridian, below the pole, was $5^h\ 6^m\ 40^s$.

On February 6, it was again observed with the transit instrument, and the resulting right ascension was $16^h\ 50^m\ 12^s$.

Before the conclusion of the meeting, it was proposed by Mr. Sheepshanks, seconded by Professor Powell, and unanimously resolved,

> "That the Society gives its hearty thanks to Captain Smyth for his valuable present of the original entries of the observations on which the *Bedford Catalogue* is founded."

It was also proposed by Mr. Sheepshanks, seconded by Mr. Galloway, and resolved unanimously,

> "That the thanks of the Society be given to Mr. Turnor for his valuable present of two volumes of Ancient MS. Astronomical Tables."

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